



The Court has reviewed the submissions of the parties, and heard oral argument at a *Daubert* hearing held on July 8, 2009.<sup>1</sup>

### **I. BACKGROUND**

In April 2007, Plaintiff Edison Wetlands, a not-for-profit environmental group, reported to the New Jersey Department of Environmental Protection (“NJDEP”) that it had discovered a contaminated seep flowing from the river bank south of the Site and had found contaminants in the Site’s mudflats at low tide. NJDEP responded by issuing a Notice of Deficiency to the Site’s owner, Defendant Akzo Nobel Chemicals, Inc. (“Akzo”), which directed Akzo to conduct an investigation and submit proposals to remediate the Site.

Akzo’s remediation consultant, Sovereign Consulting Inc. (“Sovereign”), conducted the investigation, which included testing of the seep and sediment in the mudflats. Sovereign identified several contaminants of concern in the seep, and documented the presence of many heavy metals and volatile organic compounds in the sediment. Thereafter, Akzo, in consultation with NJDEP, undertook approved remedial measures at the Site in order to control the seep.

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<sup>1</sup> This Court deferred its hearing on the *Daubert* motions at the initial request of the parties for time to facilitate settlement discussions. Both this Court, both directly and with the assistance of the Magistrate Judge, provided the parties with multiple settlement conferences. Indeed, there were more settlement conferences in this matter than in any other on this Court’s docket. Even after the *Daubert* hearing, this Court was again asked repeatedly by the parties to defer ruling, so that the parties could continue settlement talks with additional assistance from the Court. Despite all the efforts of the Court, the parties have not settled during the many months of what has, in effect, become an informal stay.

While this Court always encourages parties to settle, so much time has elapsed that the Court concludes that it is duty-bound to issue its ruling, which is seriously past due. This case is already two years old and must move toward ultimate resolution. The Court has concluded that it is not an efficient use of judicial time and resources to continue the endless rounds of settlement conferences that the parties have requested. The Court has suggested, and continues to suggest, that the parties pursue private mediation if they wish to continue their settlement discussions. However, the case at this late date will not be stayed any longer.

On January 22, 2008, Plaintiffs initiated the instant action pursuant to RCRA. To prevail under the statute, Plaintiffs must show that Defendants' conduct "may present an imminent and substantial endangerment to health or the environment." 42 U.S.C. § 6972(a)(1)(B). In July 2008, Plaintiffs moved for a preliminary injunction on grounds that the ongoing seep was causing such an endangerment. Plaintiffs requested that Defendants be compelled to: (1) take all reasonable measures to stop contamination from leaving the Site; (2) clean up the riverbank by removing solid waste and other debris, and restoring the bank with native vegetation; and (3) erect signs to warn the public of health risks relating to contact with sediments at the Site.

After hearing oral argument on Plaintiff's motion for a preliminary injunction on September 11, 2008, the Court found that expert testimony would be necessary to determine whether the levels of contaminants at the Site may present an imminent and substantial endangerment to health or the environment, and ordered expedited expert discovery. Expert discovery closed in December 2008. Thereafter, Defendants moved to exclude the testimony of two Plaintiffs' experts, Mr. Chapin and Dr. deFur, and Plaintiffs moved to exclude the testimony of Defendants' expert Dr. Lage.

The Court held a hearing pursuant to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), to evaluate the admissibility of these experts' testimony.<sup>2</sup> At the hearing, Defendants withdrew their motion to preclude the testimony of Mr. Chapin;<sup>3</sup> as a result, the

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<sup>2</sup> By means of a *Daubert* hearing, the Court "acts as a gatekeeper, preventing opinion testimony that does not meet the requirements of qualification, reliability and fit." *Schneider ex rel. Estate of Schneider v. Fried*, 320 F.3d 396, 404 (3d Cir. 2003).

<sup>3</sup> Because the challenge to Mr. Chapin has been withdrawn, *see* Transcript of hearing held July 8, 2009 ("Tr.") at 5-6, the Court will deny Defendants' motion to exclude his testimony.

Court heard testimony only from Drs. deFur and Lage. Because the qualifications of these experts were not challenged, the testimony of Drs. deFur and Lage was limited to the reliability and fit of their respective opinions.

## **II. STANDARD OF ADMISSIBILITY FOR EXPERT TESTIMONY**

The admissibility of expert testimony is a question of law governed by Federal Rule of Evidence 702, which provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Thus, “Rule 702 embodies three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability, and fit.” *Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000).

The instant motions challenge both experts’ testimony on reliability and fit grounds. To be reliable, an expert’s opinion must be “based on the ‘methods and procedures of science’ rather than on ‘subjective belief or unsupported speculation’; the expert must have ‘good grounds’ for his or her belief.” *Id.* at 742 (quoting *Daubert*, 509 U.S. at 589). Thus, “[c]ourts need not admit bare conclusions or mere assumptions proffered under the guise of ‘expert opinions.’” *Feit v. Great-West Life & Ann. Ins. Co.*, 460 F. Supp. 2d 632, 637 (D.N.J. 2006).

In order to “fit,” the expert’s testimony must in fact assist the fact-finder, by providing it with relevant information necessary to a reasoned decision of the case. *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 743 (3d Cir. 1994); *Calhoun v. Yamaha Motor Corp.*, 350 F.3d 316,

321 (3d Cir. 2003). An expert who renders an opinion based on factual assumptions not present in the case “cannot be said to ‘assist the trier of fact,’ as Rule 702 requires.” *Elcock*, 233 F.3d at 756 n.13. Consequently, “[t]his type of an opinion misleads the fact-finder and arguably does not comply with the ‘fit’ requirement.” *Id.*

### **III. DISCUSSION**

#### **A. Methodology Used In The Instant Case**

Here, Dr. Lage and Dr. deFur have been proffered as experts to testify to the extent of the risks to human health resulting from exposure to chemical constituents at the Site.<sup>4</sup> Both experts used the same “risk assessment” methodology, based on current Environmental Protection Agency (“EPA”) guidance,<sup>5</sup> which uses a four-step process defined by the National Academy of Sciences.<sup>6</sup> The four steps are:

(1) *Hazard Identification*. At this step, the assessor identifies “Constituents Of Potential Concern” (“COPCs”) present at the subject location. To do so here, both experts relied on data collected by the parties’ consultants identifying constituents present in the Site’s seep, sediment, and pore water. They considered as COPCs those compounds that exceeded state and federal guidelines. Lage Report 4-6.

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<sup>4</sup> Plaintiffs do not allege that there is any risk from waterborne contaminants in the River; rather, the Site is a mudflat along the riverbank, which is inter-tidal in nature.

<sup>5</sup> See, e.g., *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual/Part A* (1989); *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors* (1991); *Risk Assessment Guidance for Superfund/Part B* (1991); *Guidelines for Exposure Assessment* (1992).

<sup>6</sup> See *Risk Assessment in the Federal Government: Managing the Process* (1983); *Science and Judgment in Risk Assessment* (1994).

(2) *Exposure Assessment.* At this step, the assessor first identifies potential pathways of exposure to the COPCs. Exposure pathways are the routes by which humans may come into contact with COPCs, and include dermal exposure from direct skin contact with a constituent; inhalation from breathing vapors; and ingestion from incidental hand to mouth contact. The assessor then quantifies the exposure to each COPC through the identified pathway. Exposure is calculated using EPA-developed equations, which include variables for such factors as intensity, frequency, and duration of contact. The EPA's Exposure Factors Handbook provides recommended values for many of the variables used in the equations. For example, the Handbook provides inhalation and soil ingestion rates for different age groups, and includes values for exposure frequency and duration based on human behavioral data. It is up to the risk assessor to select appropriate data from the Handbook for use in the exposure equation.

As part of this process, the assessor develops an "exposure scenario" based on facts observed at the site and assumptions and inferences drawn from those facts regarding how exposure takes place. The EPA has developed a number of sample exposure scenarios for which they provide recommended values for exposure frequency and duration. Assessors may, if appropriate, use these exposure scenarios as models: after evaluating the physical characteristics of the subject location, the assessor must determine the most closely analogous EPA exposure scenario and use the recommended values, with appropriate modifications, to calculate exposure.

(3) *Toxicity Assessment.* At this step, the assessor identifies for each COPC toxicity criteria, which are an estimate of the COPC's potency to induce cancer or other health effects. Here, toxicity criteria were obtained from the EPA's Integrated Risk Information System database, EPA guidance documents, and other scientific literature. Lage Report 14.

(4) *Risk Characterization*. In the final step, the results of the exposure assessment are integrated with toxicity criteria using the EPA's current formulas. The results of these calculations provide quantitative estimates of potential risks associated with each COPC. Lage Report 15.

Neither side argues that use of this four-step method was inappropriate. Rather their criticisms center on the factual assumptions each expert made at step two in applying this methodology. Each party argues that its opposing expert made unfounded assumptions of fact, and that the use of such flawed assumptions renders the ultimate opinion unreliable, and therefore inadmissible. The Court will address the criticisms of each experts' assumptions in turn.

#### **B. Admissibility Of Dr. Gary Lage's Testimony**

Plaintiffs challenge the assumptions Dr. Lage made at step two in quantifying exposure durations and identifying exposure pathways. For example, Plaintiffs criticize Dr. Lage's assumption that a child would spend one hour a day, one day a week, 25 weeks a year, for a period of 5 years at the Site when calculating exposure duration. Plaintiffs claim that this assumption is "entirely subjective" because Dr. Lage testified at his deposition that he is not an expert on child behavior and that he knows of no studies that document exposure time periods at the Site. Pl. Br. 11-12. Plaintiffs also take issue with Dr. Lage's identification of potential exposure pathways because he "assumed without explanation" that inhalation of the seep water's vapors was the only viable pathway by which an individual could be exposed. *Id.* at 13. Plaintiffs assert that these assumptions, among others, are not based on a proper factual

foundation and therefore Dr. Lage's conclusions, based on those assumptions, must be precluded as unreliable.

Dr. Lage's report and testimony reveal that his assumptions are based on available facts and reflect educated judgments that are sensibly explained. Dr. Lage physically visited the Site and observed that it was very small, muddy, often inaccessible because of tides that caused it to be underwater for part of the day, and littered with trash and other debris that had floated down river from places outside the Site that came to rest on the Site when the tide receded. The Site was found by Dr. Lage to be most inhospitable to human recreation. Lage Report 3; Tr. 90-91. These observations informed Dr. Lage's estimates of who would visit the mudflats and how often they would do so, as well as probable exposure pathways. Moreover, Dr. Lage provides rationales for these estimates in his report, tying his assumptions to observed facts: For example, he explains that "the tidal influence and the post-high tide mud" render it "highly unlikely that someone would spend longer than one hour a day, or more than 50 hours a year in the vicinity of the seep." Lage Report 13. He further explains, with reference to observed facts, why dermal and incidental ingestion are not logical exposure pathways to the seep. For instance, he highlights that the low volume of seep water means there is no logical way that individuals could be dermally exposed in a significant way: there is not enough seep water to wade or swim in, and simply putting one's bare hand in the seep would have to occur unreasonably frequently (25 times per year, for 2 years) to have a material effect. Lage Dep. 68-69.

To the extent Plaintiffs perceive weaknesses in these assumptions, these issues can be addressed on cross-examination. *See Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 152 (3d Cir. 1999) (noting that "vigorous cross-examination" and "presentation of contrary evidence" are the



“traditional and appropriate means of attacking” potentially flawed evidence). The Court’s concern on these motions is the reliability of the expert’s method, which may properly include making assumptions so long as those assumptions are sufficiently grounded in available facts. *See Brill v. Marandola*, 540 F. Supp. 2d 563, 568 (E.D. Pa. 2008) (experts may make assumptions of fact “so long as such assumptions have a reasonable basis in the available record”). Here, the Court is satisfied that Dr. Lage employed a reliable method by personally assessing the physical characteristics of the mudflats and making informed and reasonable judgments based on his observations. As a result, Plaintiffs’ motion to preclude the testimony of Dr. Lage will be denied.

### **C. Admissibility Of Dr. Peter deFur’s Testimony**

Plaintiffs offer Dr. Peter deFur to opine on the risks to both human health and the environment resulting from the presence of chemicals at the Site. Defendants challenge Dr. deFur’s opinions with respect to both.

#### *1. Human Health Risk*

Dr. deFur used the same risk assessment model as Dr. Lage. However, Dr. deFur made different factual assumptions, and therefore used different data, in that model. Most notably, Dr. deFur assumed that there are recreational uses of the mudflats at the Site. deFur Report 5. Based on this assumption, Dr. deFur selected data from the EPA Exposure Factors Handbook for a recreational user of a “river/beach or pool” to estimate the amount of time people spend at the Site. *Id.*; Tr. 15. This exposure scenario, he testified, “seemed to most closely mimic the behavior” of someone visiting the Site. deFur Dep. 121; Tr. 47. Using data from the Handbook, Dr. deFur then made various assumptions regarding exposure duration and frequency. For

example, he assumed that women would spend 208 hours per year (amounting to 5.2 hours each week – fully 100% of a woman’s recreational time per week – for 40 of the 52 weeks in the year) recreating at the Site. deFur Report 5. He also assumed that exposure would occur over a 30-year period. *Id.* By making these usage assumptions, Dr. deFur calculated a far greater numerical exposure risk using the EPA model.

Defendants argue that Dr. deFur had no reliable basis for his initial assumption that there are recreational uses of the mudflats, which drove his conclusions regarding exposure duration and frequency. Dr. deFur did not personally visit nor study the Site before preparing his expert report; instead, he relied on photographs of the area, which showed the presence of a raised stairway leading to a cement public boat ramp adjacent to the Site, and a conclusory statement by the individual Plaintiff Robert Spiegel that some people sometimes walk on the mudflats.<sup>7</sup> deFur Dep. 45, 75-76; Tr. 14. While reliance on this type of information may be appropriate, the conclusions drawn by the expert must still be rational and reliably flow from that information. *See Oddi v. Ford Motor Co.*, 234 F.3d 136, 146 (3d Cir. 2000) (“A court must examine the expert’s conclusions in order to determine whether they could reliably flow from the facts known to the expert . . . . A court may conclude that there is simply too great a gap between the data and the opinion proffered.”) (internal quotations and citations omitted).

Here, Dr. deFur’s assumptions are not grounded in the record. First, his assumption of recreational use ignores the physical nature of the mudflats, which he never personally saw. As

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<sup>7</sup> Notably, the expert did not attempt to quantify in any manner how often persons walk on the mudflats, nor their age or gender (which are determinative of exposure rates), nor the duration of their physical contact with this mud (which is highly germane to the calculation of exposure rates). deFur Dep. 72-73.

readily observable from photographs of the area, the mudflats are not only muddy, but also littered with trash and debris washed ashore by the River. Moreover, the mudflats are inter-tidal, and therefore covered entirely with water for part of each day. This important fact, which would limit any potential accessibility to the mudflats at the Site, was not factored into Dr. deFur's exposure calculus at all. The Site is clearly vastly different than the "river/beach or pool" scenario assumed by Dr. deFur, and Dr. deFur has set forth no reliable set of facts that he used in forming his opinion to treat the Site as a "river/beach or pool" in measuring duration of access for recreational purposes.<sup>8</sup>

Similarly, Dr. deFur's assumption that women would spend 208 hours per year on the mudflats is absurd in light of the Site's physical characteristics. In making this assumption, Dr. deFur used the EPA Handbook's estimate that women spend an average of 5.2 hours per week in active leisure activities. deFur Report 5. That 5.2 hours, however, is a woman's *total* active leisure time per week, for all active leisure activities. In other words, Dr. deFur assumed that women would spend 100% of their active leisure time each week at a muddy, littered site located behind a chemical plant, which is often underwater. Such an assumption is so utterly unfounded that its use is not a remotely reliable factual basis upon which an exposure opinion can rest.

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<sup>8</sup> The existence of a public boat ramp adjacent to the Site, on its own, is an insufficient factual basis to support recreational use. The boat ramp area is very different than the Site; it includes a parking lot, dock, and gazebo and is clearly intended for recreational purposes. The Site, by contrast, is muddy, littered with debris, and not easily accessible. Dr. deFur has not connected the two areas with empirical evidence showing, for example, that individuals frequently climb down from the elevated boat ramp and wander onto the Site, and use the mudflats as a boat launch or for other recreational purposes. Further, there is no allegation that boating activity in the River poses a human health risk. Plaintiffs do not allege, for example, that there is a risk associated with breathing vapors emanating from the River's waters, nor from dermal exposure from being splashed.

Dr. deFur's assumption that exposure at the mudflats would occur over a 30-year period likewise ignores the realities of the Site. According to Dr. deFur's report, 30 years is the default figure used by the EPA for *residential* exposures. deFur Report 5. However, there are no facts in the record demonstrating that this is a residential area, nor has Dr. deFur explained why he used the residential standard. Moreover, use of the 30-year duration period assumes, without explanation, that contaminants in the seep and mudflats will not become less concentrated with time.

To be clear, the Court does not fault Dr. deFur for making assumptions. As the Third Circuit has observed, *Daubert* "does not preclude testimony merely because it may be based upon an assumption." *In re TMI Litig.*, 193 F.3d 613, 677 (3d Cir. 1999). Rather, "[e]xperts are expected to make inferences . . . and they are granted wide latitude in determining what data is needed to reach a conclusion." *JMJ Enters., Inc. v. Via Veneto Italian Ice*, No. 97-0652, 1998 WL 175888, at \*6 (E.D. Pa. Apr. 15, 1998). However, that wide latitude is finite; the expert's assumptions must still be "accompanied by a sufficient factual foundation" and cannot ignore the "real world." *Elcock*, 233 F.3d at 755, 756 n.12; *see also* *JMJ Enters.*, 1998 WL 175888, at \*6 ("expert testimony must have some connection to existing facts"). Here, Dr. deFur's assumptions lack this factual foundation because he has ignored the realities of the Site in calculating his exposure assumptions. Although Dr. deFur used a standard method in his risk assessment, the conclusions of this assessment are rendered meaningless because his factual assumptions, which drove the calculations that lead to those conclusions, are not tied to the facts in a reasonable way. Therefore, the Court, in its gatekeeper role, will grant Defendants' motion to preclude Dr. deFur's proffered expert opinion regarding human exposure. *See id.* at 755-56

(excluding expert's testimony where expert's model relied on several empirical assumptions not supported by the record).

## 2. *Environmental Risk*

In his report, Dr. deFur opines that the levels of certain contaminants at the Site are sufficiently high to pose "serious risks" to the animals in the river and mudflats. deFur Report 9. His method for reaching this conclusion was to compare the contaminant levels reported by Defendants' consultants to NJDEP screening standards; he then found that where the contaminant levels were higher than state standards, a risk to the environment existed. *See id.* at 8-9. Dr. deFur does not explain, however, why using the state standards as benchmarks is an accepted and reliable method for concluding that "serious risks" to the animals in the River and on the mudflats exist at the Site. *Cf. Interfaith Community Org. v. Honeywell Int'l, Inc.*, 399 F.3d 248, 261 n.6 (3d Cir. 2005) (noting that state standards do not define a party's federal liability under RCRA).

Dr. deFur did not study the Site prior to preparing his report. Tr. 42. He did not identify the specific animal populations that inhabit, nest, or feed at the Site, testifying that he simply asked his colleagues if certain species occurred in the area. deFur Dep. 49. He did not analyze the effects the Site's contaminants posed to those animal populations. Instead, his report relies on generalized, theoretical scenarios. For instance, Dr. deFur states that animals that consume contaminated prey can develop serious reproductive impairments. But, Dr. deFur does not connect this scenario to the facts of this case: he has not identified what prey and predators inhabit the Site, nor the extent to which prey animals feed in any significant measure on the Site (as contrasted with the remaining miles of riverfront); he has not determined the extent to which

any particular contaminants from the Site are absorbed into the bodies of prey, or whether the prey have actually accumulated sufficient contaminants to pose a risk to predators; nor has he any indication that animals at the Site have reproductive impairments. *See* deFur Dep. 69-70. So little of Dr. deFur's report (*e.g.*, only three paragraphs) addresses risk to animals that it appears that this potential basis for liability is not seriously being pursued by Plaintiffs. Dr. deFur's opinions on ecological risk are far too unformed and removed from the facts of this case to be reliable in any way. While study could surely be done, it has not been done here.

#### IV. CONCLUSION

For the foregoing reasons, the Court will deny Plaintiffs' motion to exclude the testimony of Dr. Lage. The Court will grant Defendants' motion to exclude the testimony of Dr. deFur, and deny Defendants' motion to exclude the testimony of Mr. Chapin. An appropriate order will issue.

/s/ Faith S. Hochberg  
Hon. Faith S. Hochberg, U.S.D.J.